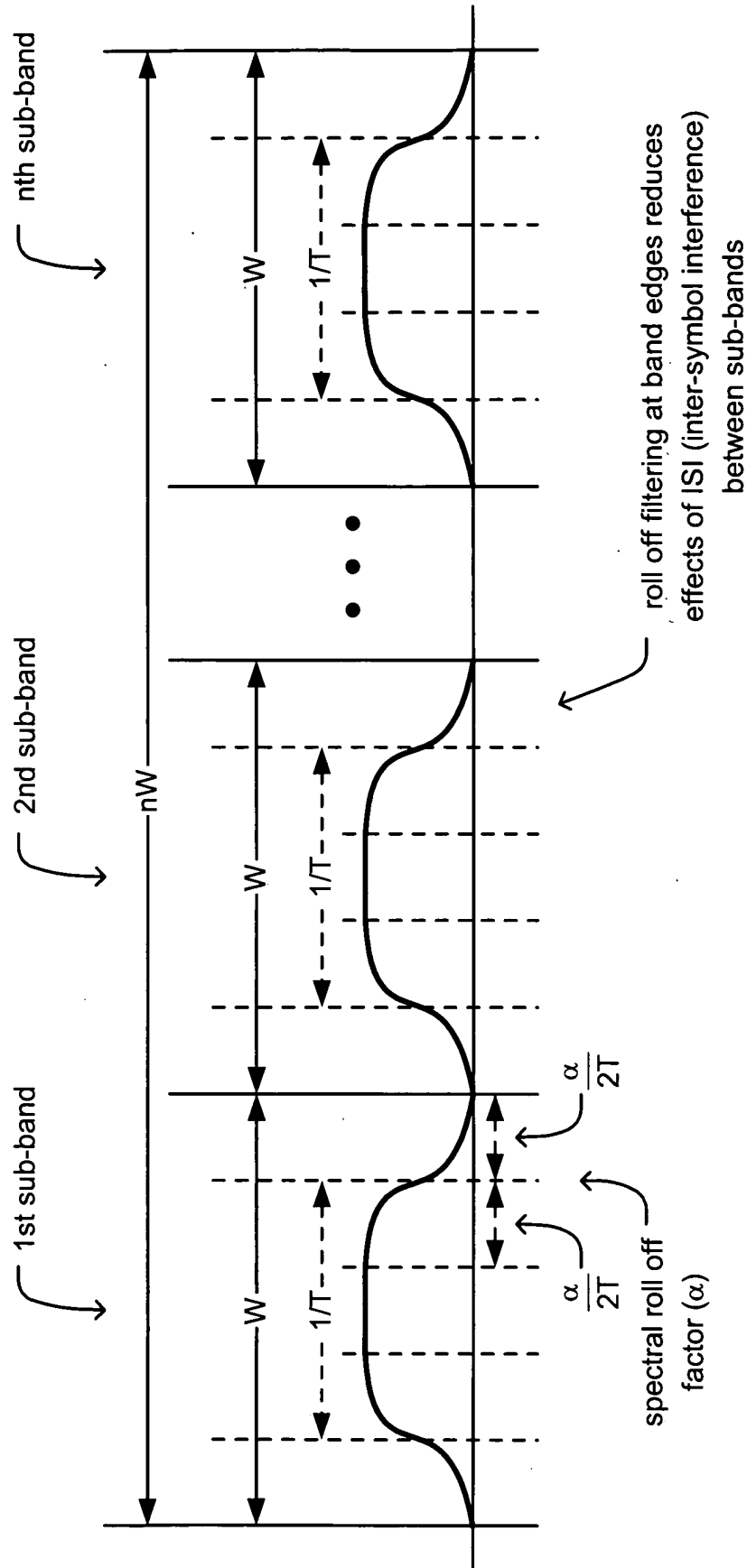


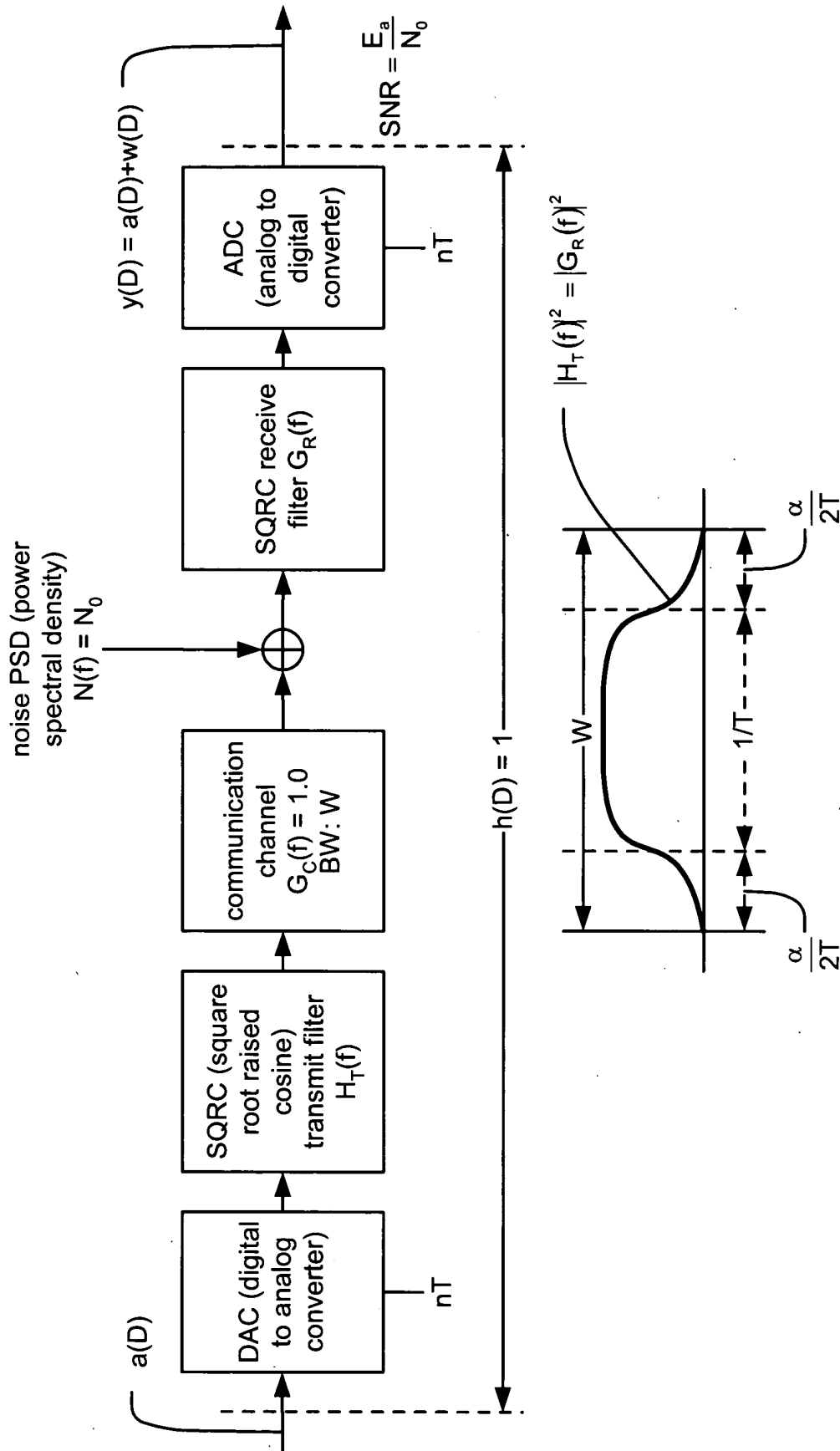
Modulation rate ($1/T$) across a communication channel of bandwidth (W)

Fig. 1
(prior art)



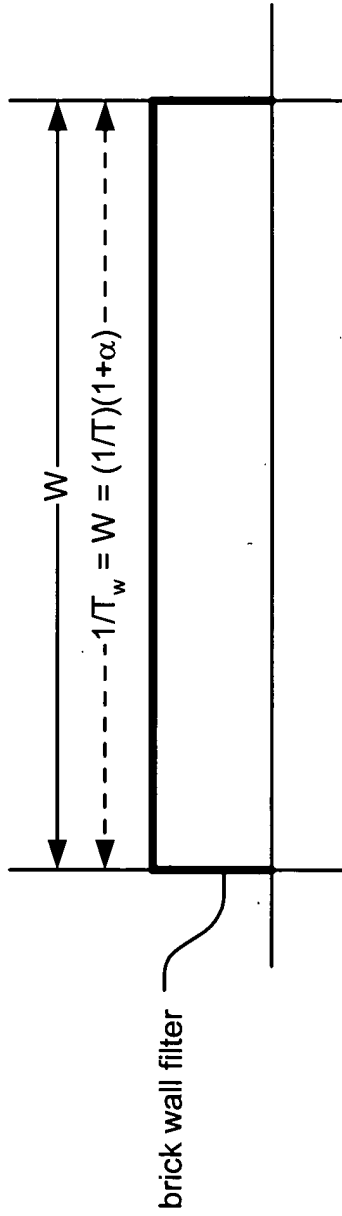
Modulation rate ($1/T$) across multiple bands of a communication channel of bandwidth (nW)

Fig. 2
(prior art)

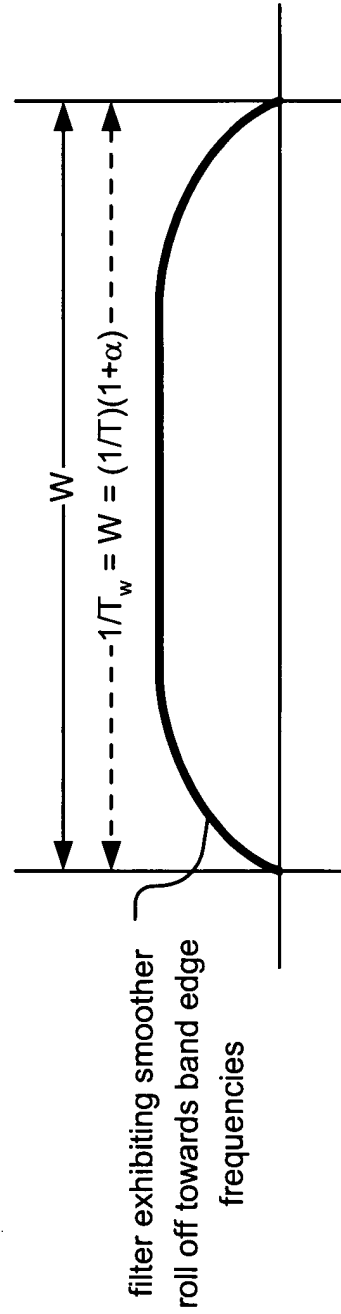


Complex baseband model of zero inter symbol interference (ISI) baseline system

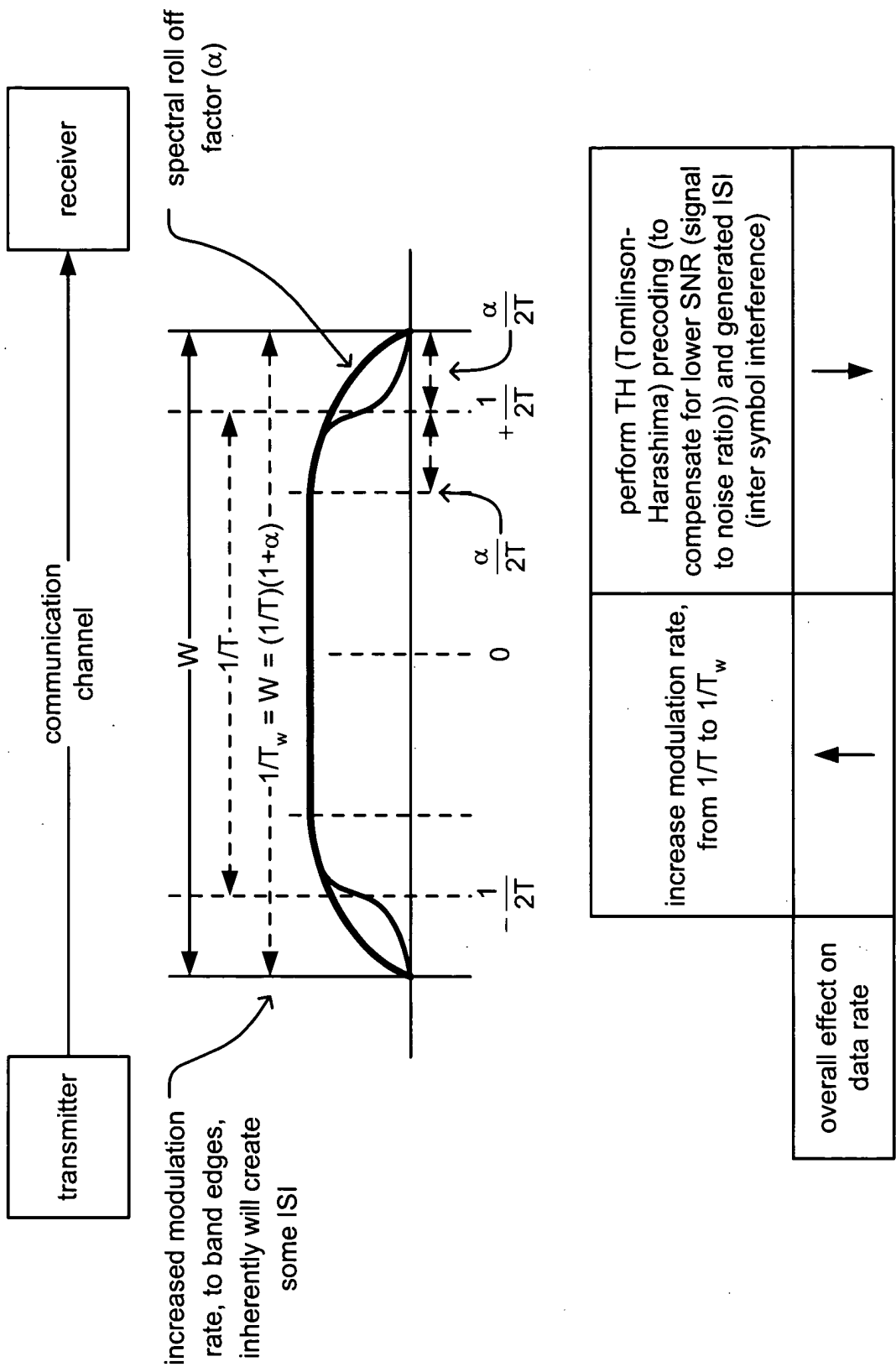
Fig. 3
(prior art)



Theoretical, un-realizable brick wall filtering ensuring spectral nulls at band edges
Fig. 4A

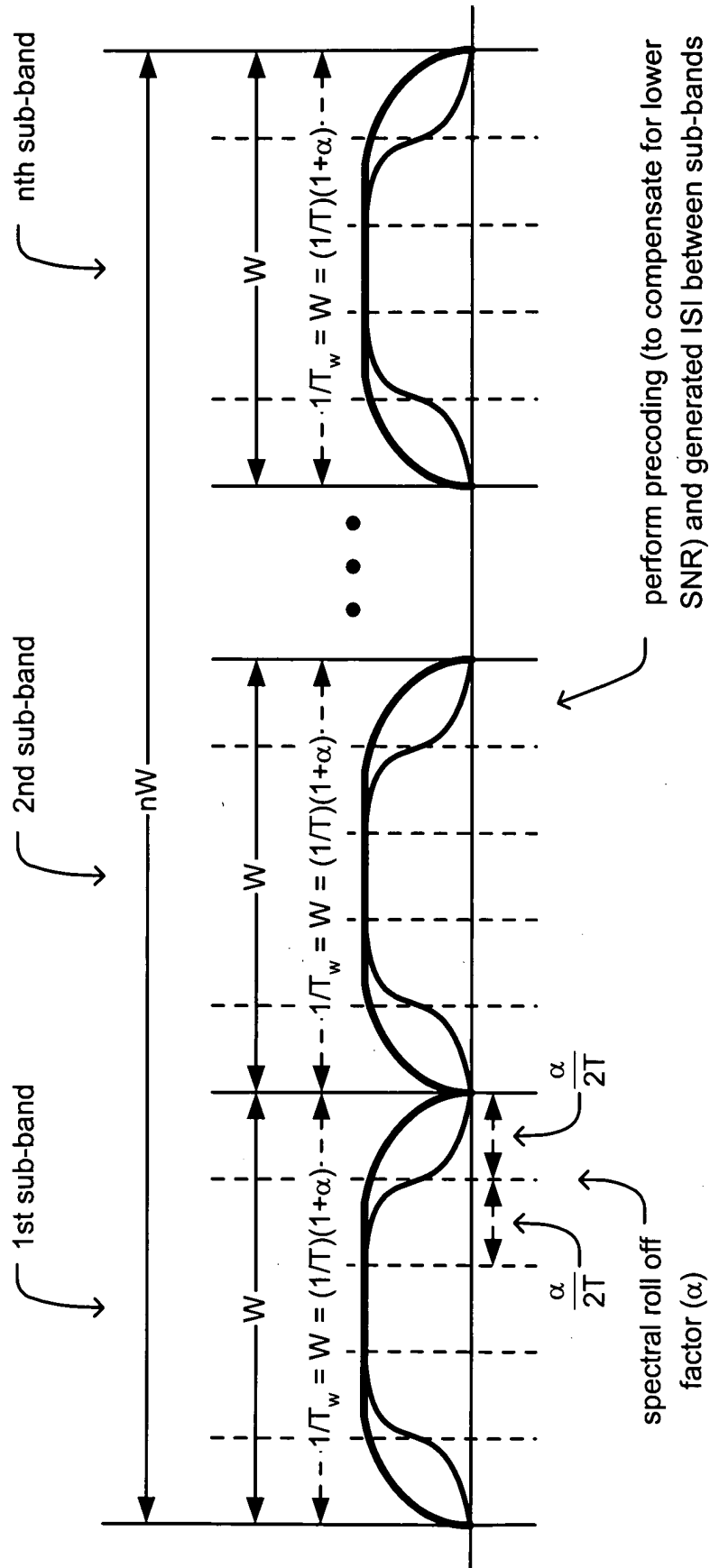


Realizable filtering ensuring spectral nulls at band edges
Fig. 4B



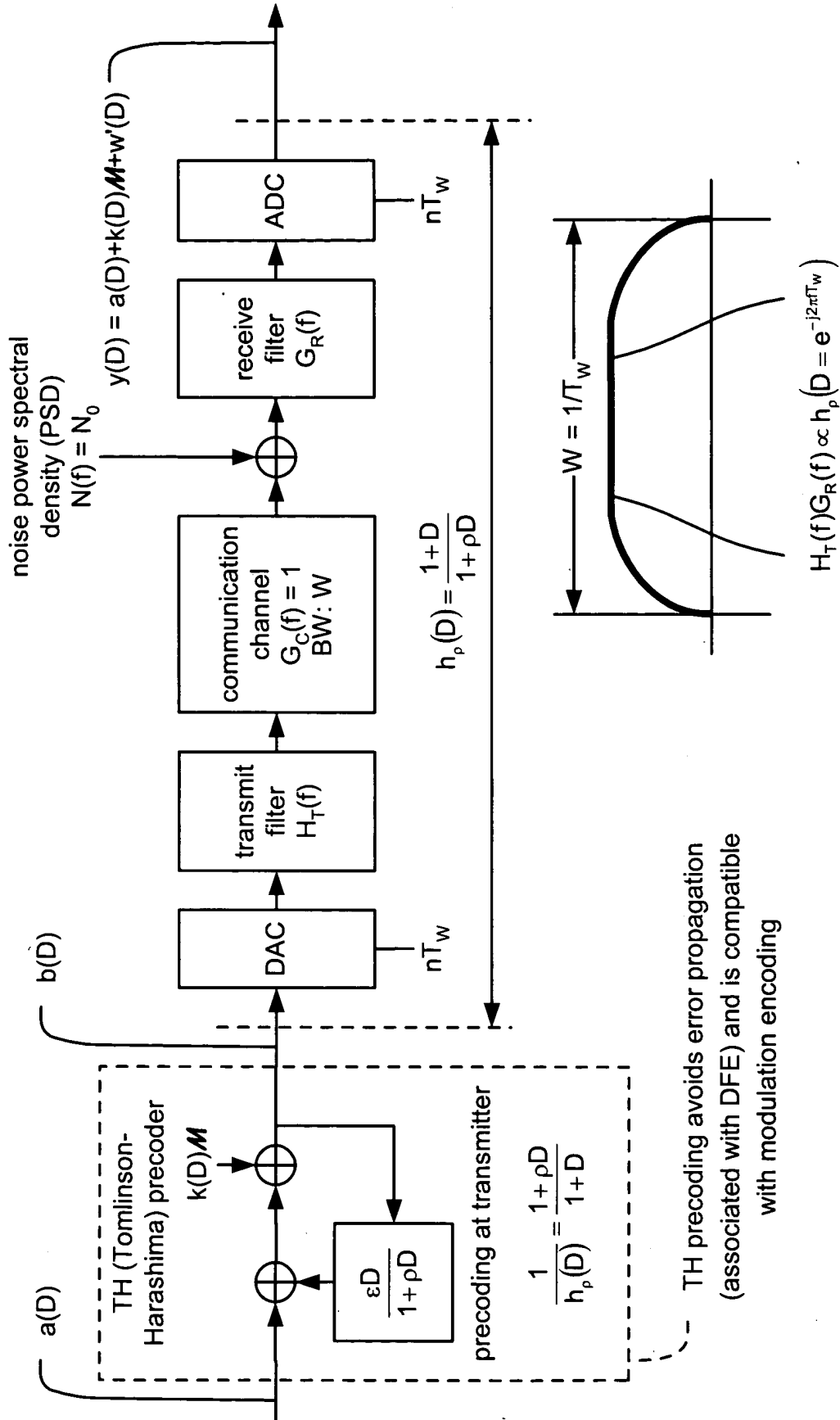
ZEB (zero excess bandwidth) modulation rate ($1/T_w$) across a communication channel of bandwidth (W)

Fig. 5



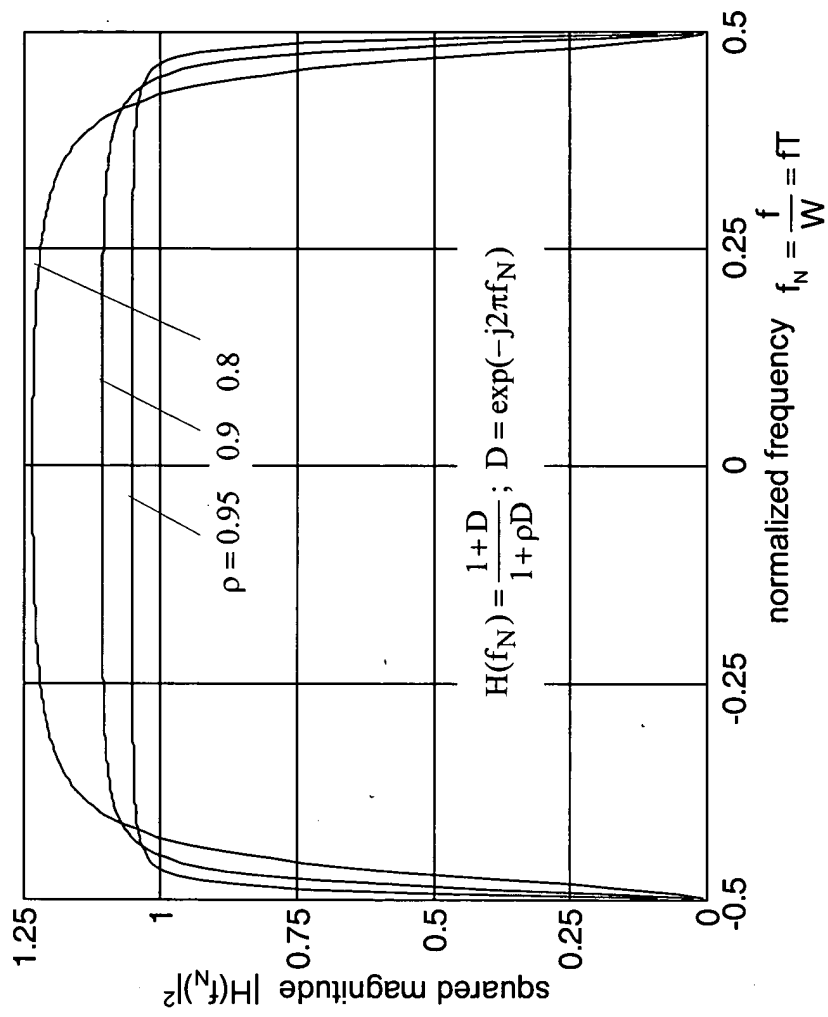
ZEB modulation rate $(1/T_w)$ across multiple bands of a communication channel with bandwidth (nW)

Fig. 6



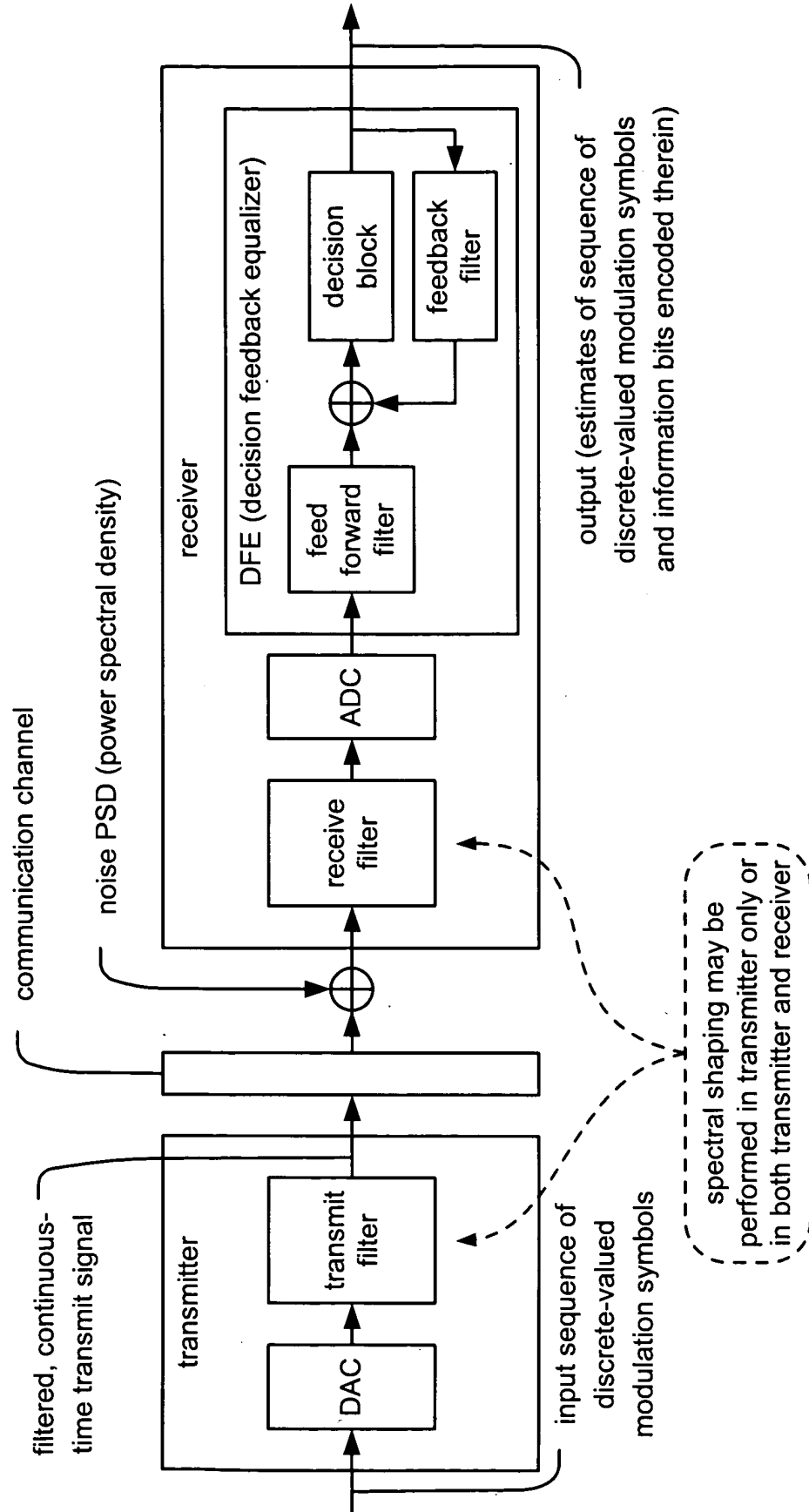
Complex baseband model of ZEB system with IIR (infinite impulse response) symbol response and employing TH (Tomlinson-Harashima) precoding

Fig. 7



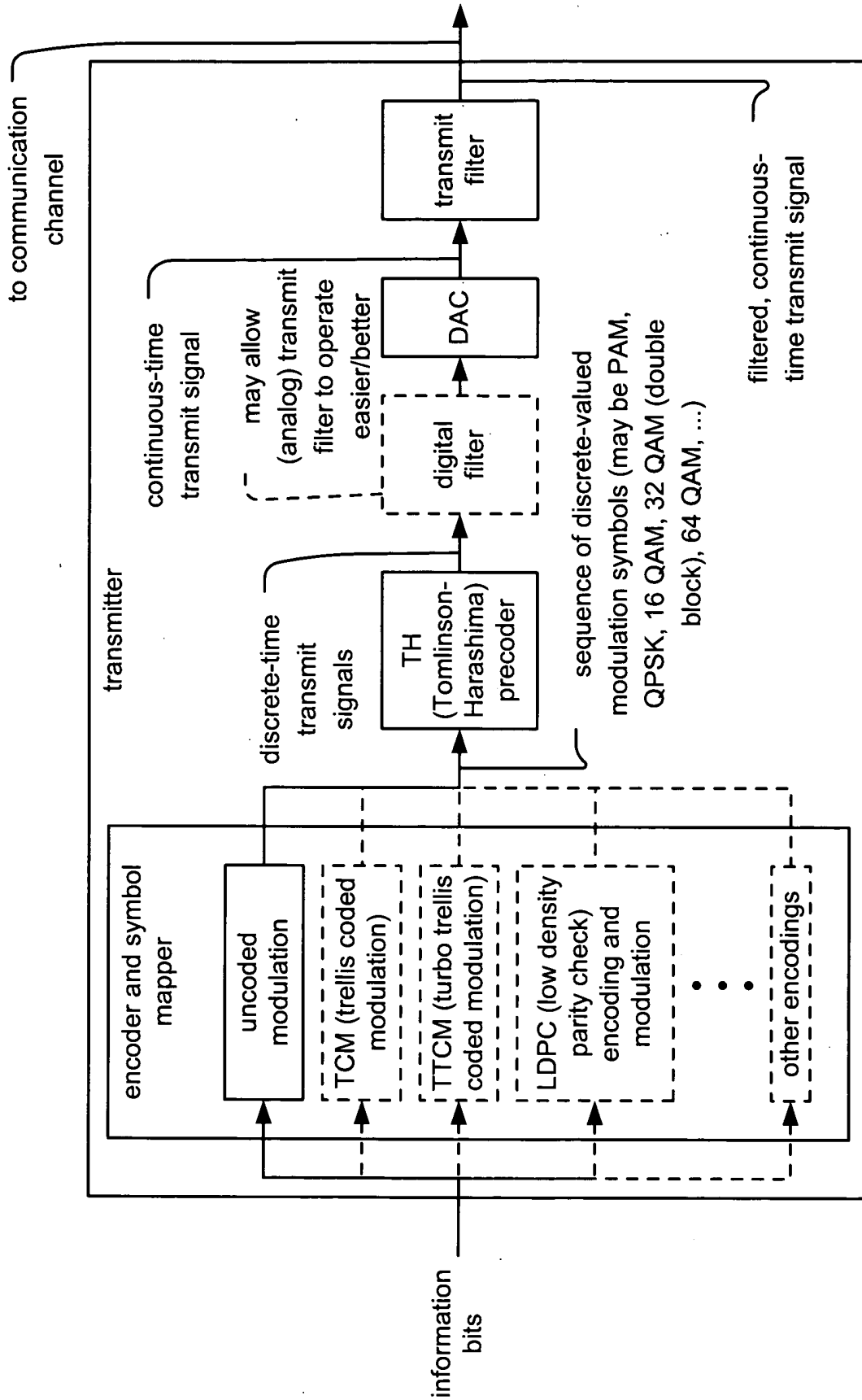
Squared magnitude of IIR response

Fig. 8



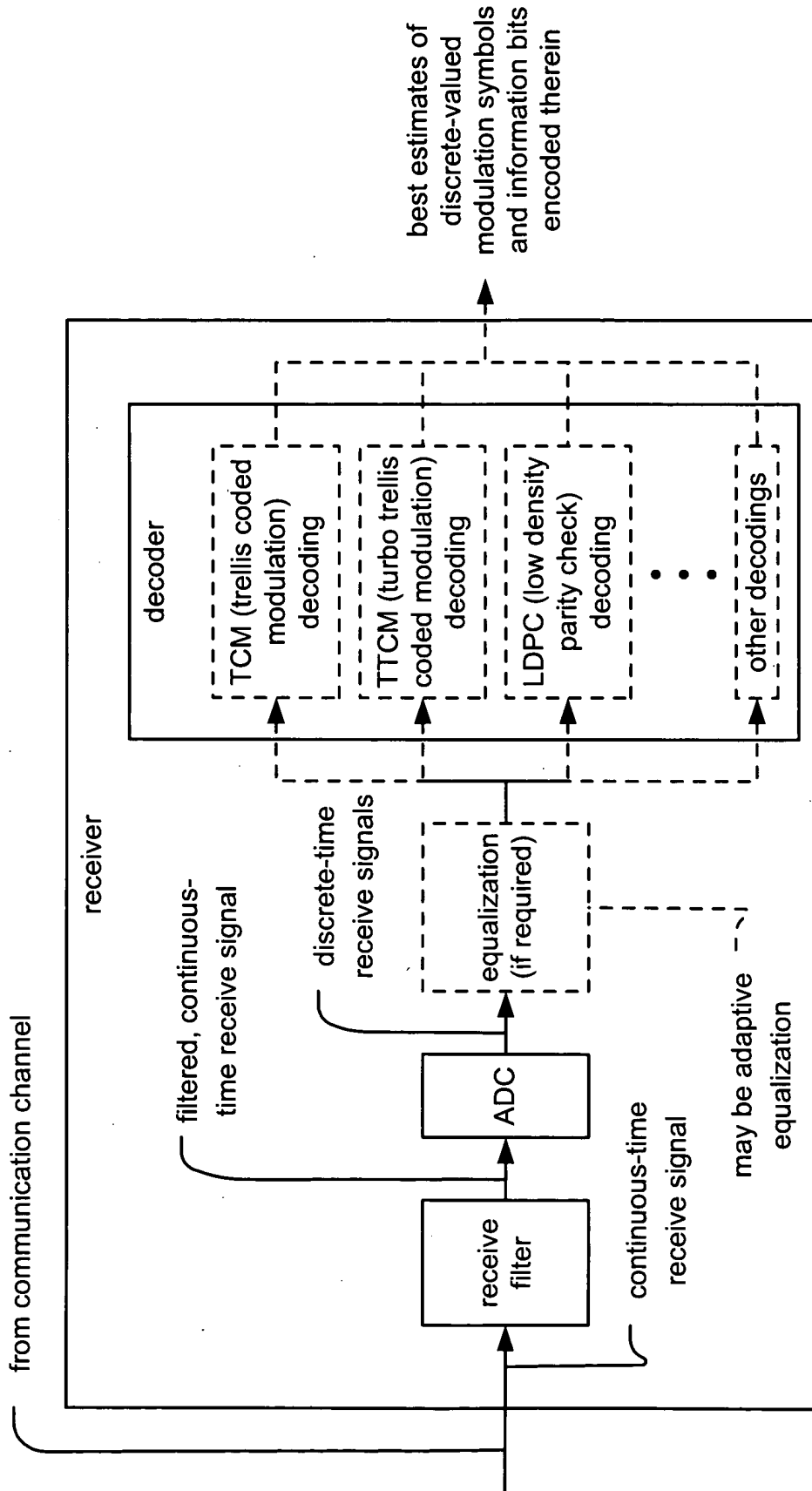
Complex baseband model of ZEB modulation communication system

Fig. 9



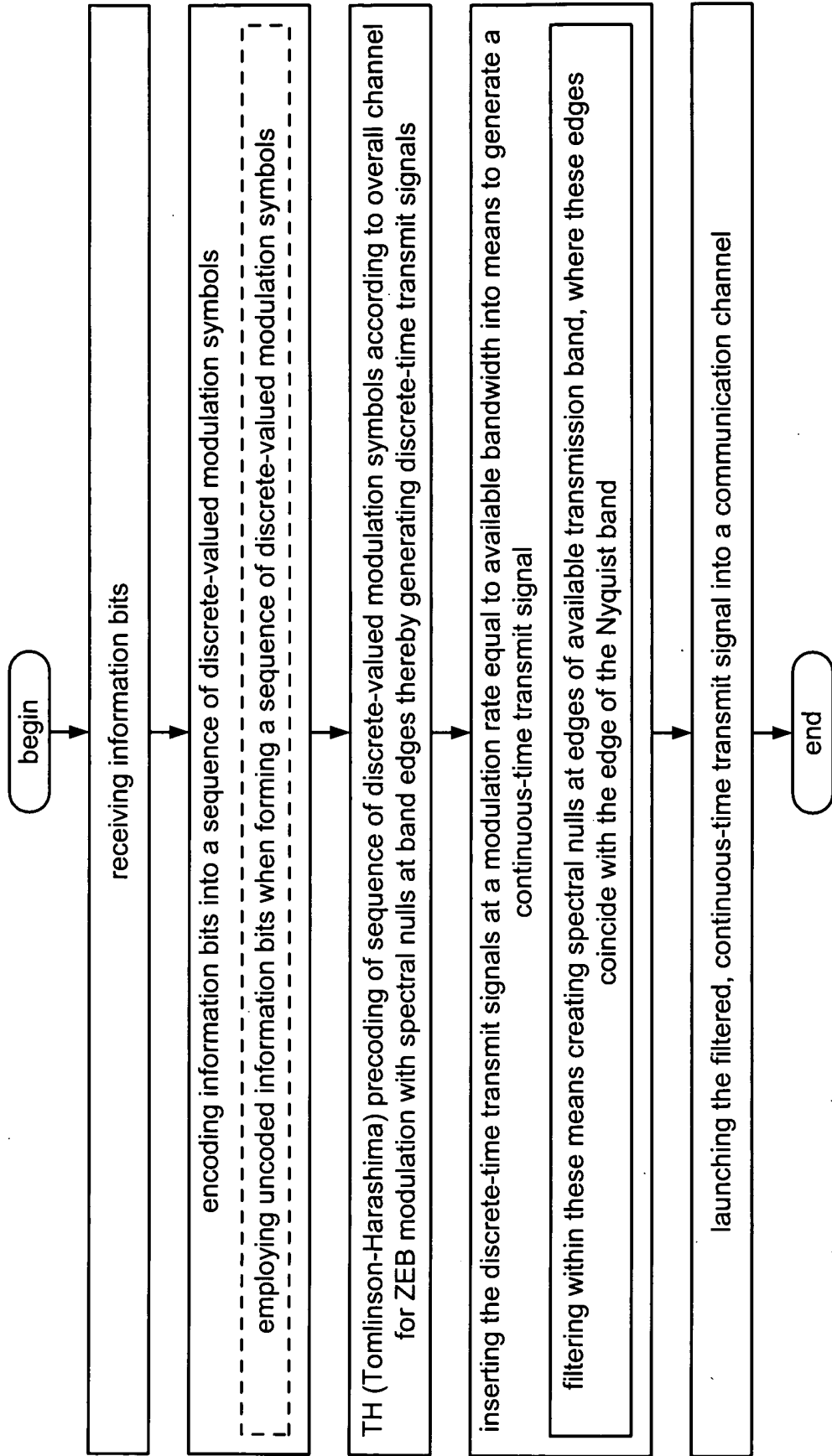
ZEB modulation communication transmitter including various forms of encoding and symbol mapping and TH precoding

Fig. 10



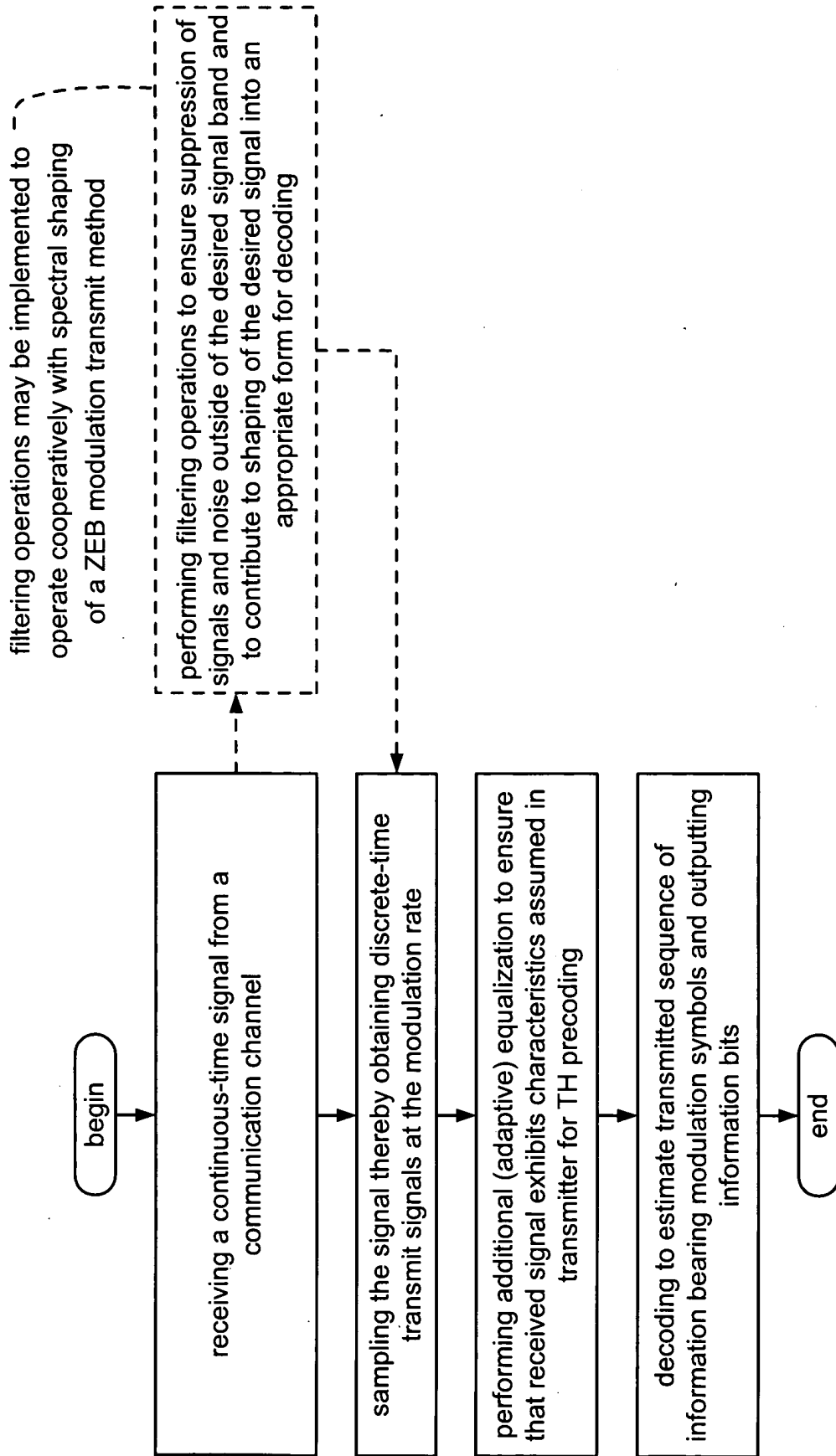
ZEB modulation communication receiver

Fig. 11



ZEB modulation transmit method

Fig. 12



ZEB modulation receive method

Fig. 13